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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GRIER, LAURA A

ART UNIT	PAPER NUMBER
2644	6

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/828,116

Applicant(s)

JIANG ET AL.

Examiner

Laura A Grier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4,6-22 and 25-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,6 and 25-27 is/are rejected.
- 7) ☒ Claim(s) 4,7-14,16-18, 22 and 28-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. The indicated allowability of claims 3 and 25 is withdrawn in view of the newly discovered reference(s) to Rainer, U. S. Patent No. 4623872 and Lee, U. S. Patent No. 5831880. Rejections based on the newly cited reference(s) follow.

Claim Objections

2. Claims 18 and 28-33 are objected to because of the following informalities: dependent claims 18 and 28, respectively depend from cancelled claims. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 3 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson in view of Rainer, U. S. Patent No. 4623872 and further in view of Lee, U. S. Patent No. 5831880.

Regarding **claims 3 and 25**, Wilson discloses a method and system for compressing the dynamic range of audio signals (figures 3 and 5). Wilson's disclosure comprises a receiver receiving an audio input, wherein the audio input undergoes

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compression for the purposes of controlling level of the signal from clipping a signal when the signal exceeds a particular level, specifically in figure 3, a circuit is provided where an input is received, compression laws are applied to calculate a gain value (inherent as a compression ratio) in respect to the peak level of a signal, which reads on the input and compression circuit (col. 4, lines 13-58, and col. 10, lines 5-16, and figure 3). Wilson's disclosure indicates that a new gain can be calculated and provided to the gains adjuster for controlling the gain of the signal, and as well providing gain changes in the respect when sound level is above or below and certain predetermined level (col. 7 lines 3-53 accordingly, which teaches non-uniformed gain distribution by Wilson's gain calculators (figure 3, references 20 and 18); wherein, the gain gradient calculator calculates the rate adjustment of the gains and is provided as a control signal to the gain adjuster, which justifies a type multiplier. However, Wilson fails to disclose the calculator as a CSD multiplier.

Rainer discloses a circuit for CSD coding of binary number representation in two's complement. Rainer's disclosure teaches CSD coding as a representation of multipliers used in digital data processing (col. 1, lines 10-26).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wilson by implementing CSD multiplier for the purpose of increasing the operating speed of the digital gain control process, wherein the use of CDS multipliers in gain controlling is a well technique as taught by Lee (col. 1, lines 7-41).

Regarding **claims 6 and 27**, respectively, Wilson, Rainer and Lee (herein, Wilson combination) disclose everything claimed as applied above (see claim 3 and 25,

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respectively). Wilson combination obviously discloses the CSD multiplier adjusting the gain in real time as evident of the enhanced and speedy processing capability of the CSD multiplier as taught by Rainer and Lee.

5. **Claim 3 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Werrbach and further in view of Lee.

Regarding **claims 3 and 25**, Werrbach discloses a peak-accelerated compressor. Werrbach's disclosure comprises an audio signal input into the amplifier (VCA), which is part of the compressor's structure, as well as the VCA, peak filter and level detector (figures 2a-2b, and 6-7), thus a compression circuit where a compression ratio is applied to the input signal when it includes transient peaks that cause the level of the signal to become excessive (col. 2, lines 33-42, col. 6, lines 51-67 and col. 7, lines 1-11), which reads on an input and compression circuit, wherein the compression ratio is a function the a signal peak level; Werrbach further discloses the a varied gain may be applied in respect to the changes of the level as indicated by the level detector (col. 2, lines 43-52), which indicates non-uniform gain distribution. However, Werrbach fails to disclose the calculator as a CSD multiplier.

Regarding the CSD multiplier, Lee discloses a digital filter comprising multiplier, wherein such filter is commonly used in gain controlling procedures. Lee further indicates that a CSD multiplier can be used in the digital filter (col. 1, lines 15-20 and 36-41).

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It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Werrbach by implementing CSD multiplier for the purpose of reducing the amount of hardware usually required.

Regarding claim 26, Werrbach and Lee discloses everything claimed as applied above (see claim 25). Werrbach teaches the gain applied after evaluating the compression ratio (col. 2, lines 33-52).

Claim 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werrbach in view of Dallavalle et al., U. S. Patent No. 5606625.

Regarding **claim 15**, Werrbach discloses a peak-accelerated compressor. Werrbach's disclosure comprises an audio signal input into the amplifier (VCA), which is part of the compressor's structure, as well as the VCA, peak filter and level detector (figures 2a-2b, and 6-7), thus a compression circuit where a compression ratio is applied to the input signal when it includes transient peaks that cause the level of the signal to become excessive (col. 2, lines 33-42, col. 6, lines 51-67 and col. 7, lines 1-11), which reads on an input and compression circuit, wherein the compression ratio is a function the a signal peak level. However, Werrbach fails to specifically disclose, the compression circuit having a state machine with a 1st and 2nd comparator and 1st and 2nd register, therein.

Regarding the compression having a state machine, in a similar field of endeavor, Dallavalle et al. (herein, Dallasvalle) discloses a digital circuit to regulate the gain of an amplifier stage. Dallavalle's digital circuit reads on the state machine based upon its functions and components, wherein the components included a digital comparator (5) which compares the input signal to data provided thereto from the register (15), which

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indicates a 1st comparator and 1st register, digital comparator (6), which compares the input signal to data stored and provided thereto by the register (11) and the threshold register (12) – figure 1, abstract, col. 2, lines 48 – col. 3, lines 28).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Werbbach by implementing a digital circuit for effectively controlling the gain of analog signal after digitization to prevent distortion.

Claims 4, 7-14, 16-17, 22 and 28-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the claims are rewritten to overcome the claim objection provided above.

Response to Arguments

6. The applicant did not provide any arguments; the applicant only provided remarks in respect the amended changes of the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura A Grier whose telephone number is (703) 306-4819. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386.

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Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

LAG

July 23, 2004

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XU MEI
PRIMARY EXAMINER